Listing of Claims

This listing of claims is provided for the convenience of the Examiner, since the claims have not been amended with this response.

1. (Previously presented) A proton exchange membrane fuel cell comprising:
a membrane electrode assembly comprising a proton permeable membrane bonded on one side to a porous anode and bonded on the opposite side to a porous cathode;
a continuous supply of a borohydride anolyte and a means of flowing the anolyte over the anode of the cell;
a continuous supply of a catholyte and a means of flowing the catholyte over the cathode of the cell;
a first anode catalyst embedded in surface of the anode and catalyzing the anolyte to generate hydrogen;
a second anode catalyst separately embedded in surface of the anode and catalyzing hydrogen produced by the first anode catalyst to generate hydrogen ions; and
a cathode catalyst embedded in surface of the cathode and catalyzing the catholyte.

2. (Original) The fuel cell of claim 1, wherein hydrogen diffuses from the first anode catalyst to the second anode catalyst without the accumulation of hydrogen gas beyond the surfaces of the two anode catalysts.

3. (Original) The fuel cell of claim 1, wherein the first anode catalyst is selected from the group consisting of ruthenium, rhodium, cobalt, iron, nickel, palladium, rhenium, osmium, and platinum.

4. (Original) The fuel cell of claim 3, wherein the first anode catalyst is ruthenium.

5. (Original) The fuel cell of claim 1, wherein the second anode catalyst is selected from the group consisting of ruthenium, rhodium, cobalt, iron, nickel, palladium, rhenium, osmium, and platinum.

6. (Original) The fuel cell of claim 5, wherein the second anode catalyst is platinum.

7. (Original) The fuel cell of claim 1, wherein the cathode catalyst is selected from the group consisting of ruthenium, rhodium, cobalt, iron, nickel, palladium, rhenium, osmium, and platinum.

8. (Original) The fuel cell of claim 7, wherein the cathode catalyst is platinum.

9. (Original) The fuel cell of claim 1, wherein the borohydride anolyte comprises a carrier mixed with a borohydride compound.

10. (Original) The fuel cell of claim 9, wherein the borohydride anolyte carrier is an aqueous carrier.

11. (Original) The fuel cell of claim 9, wherein the borohydride anolyte carrier is a non-aqueous carrier.

12. (Original) The fuel cell of claim 9, wherein the borohydride compound is a metal borohydride salt.

13. (Original) The fuel cell of claim 12, wherein the borohydride compound is sodium borohydride.

14. (Original) The fuel cell of claim 1, wherein the catholyte is oxygen gas.

15. (Original) The fuel cell of claim 1, wherein the catholyte is air.

16. (Previously presented) A method of obtaining electrical power through the electrochemical conversion of a continuous supply of a borohydride anolyte within a proton exchange membrane fuel cell having a membrane electrode assembly comprising a proton permeable membrane bonded on one side to a porous anode and bonded on the opposite side to a porous cathode, the method comprising the steps of:

selecting and embedding in surface of the anode a first anode catalyst to generate hydrogen by catalyzing the anolyte; and

selecting and separately embedding in surface of the anode a second anode catalyst to generate hydrogen ions by catalyzing hydrogen produced by the first catalyst;

selecting and embedding in surface of the cathode a cathode catalyst to catalyze the catholyte;

flowing the catholyte over the cathode of the cell; and

flowing the anolyte over the anode of the cell.

17. (Original) The method of claim 16, wherein hydrogen diffuses from the first anode catalyst to the second anode catalyst without the accumulation of hydrogen gas beyond the surfaces of the two anode catalysts.

18. (Original) The method of claim 16, wherein the first anode catalyst is selected from the group consisting of ruthenium, rhodium, cobalt, iron, nickel, palladium, rhenium, osmium, and platinum.

19. (Original) The method of claim 18, wherein the first anode catalyst selected is ruthenium.

20. (Original) The method of claim 16, wherein the second anode catalyst is selected from the group consisting of ruthenium, rhodium, cobalt, iron, nickel, palladium, rhenium, osmium, and platinum.

21. (Original) The method of claim 20, wherein the second anode catalyst selected is platinum.

22. (Original) The method of claim 16, wherein the cathode catalyst is selected from the group consisting of ruthenium, rhodium, cobalt, iron, nickel, palladium, rhenium, osmium, and platinum.

23. (Original) The method of claim 22, wherein the cathode catalyst selected is platinum.

24. (Original) The method of claim 16, wherein the borohydride anolyte comprises a carrier mixed with a borohydride compound.

25. (Original) The method of claim 24, wherein the borohydride anolyte carrier is an aqueous carrier.

26. (Original) The method of claim 24, wherein the borohydride anolyte carrier is a non-aqueous

carrier.

27. (Original) The method of claim 24, wherein the borohydride compound is a metal borohydride salt.

28. (Original) The method of claim 27, wherein the borohydride compound is sodium borohydride.

29. (Original) The method of claim 16, wherein the catholyte is oxygen gas.

30. (Original) The method of claim 16, wherein the catholyte is air.